

AMENDMENT TO THE CLAIMS

1. (Currently Amended) A method for detecting and classifying a shape in a medical image, comprising the steps of:

~~(a) generating a plurality of 2-D sections through a 3-D volume in said medical image, said 3-D volume comprises said shape;~~

~~(b) performing feature estimation of said shape for each of said plurality of 2-D sections;~~

~~(c) generating a shape signature based on said estimated features; and~~

~~(d) classifying said shape signature with a classifier to classify said shape.~~

(a) having a shape signature classifier, said shape signature classifier comprises a plurality of shape signatures of different shapes;

(b) determining a shape signature, wherein said determining comprises:

(i) having a 3-D volume of a medical image said 3-D volume comprises at least part of a structure;

(ii) selecting a shape within said at least part of said structure of said 3-D volume;

(iii) generating a plurality of triples of mutually orthogonal planes within said 3-D volume, wherein said triples differ from each other in position, orientation or position and orientation;

(iv) for each set of said plurality of triples determining a plurality of attributes;

(v) for each set of said plurality of triples combining said determined plurality of attributes into a feature vector; and

(vi) combining said feature vectors into a shape signature defining said selected shape within said 3-D volume, wherein said shape signature is obtained via a vector quantization method; and

(c) classifying said selected shape by analyzing said shape signature of said combined feature vectors in view of said plurality of shape signatures in said shape signature classifier.

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Currently Amended) The method as set forth in claim 1 [[4]], wherein said plurality of triples of mutually orthogonal planes are randomly selected.

6. (Currently Amended) The method as set forth in claim 1, wherein said determining said plurality of attributes ~~feature-estimation~~ comprises the step of determining intensity features or statistics.

7. (Currently Amended) The method as set forth in claim 1, wherein said determining said plurality of attributes ~~feature-estimation~~ comprises the step of fitting one or more lines, fitting one or more circles, fitting one or more ellipses, fitting one or more quadratic curves, fitting one or more rectangles, or fitting one or more parallel lines.

8. (Canceled)

9. (Canceled)

10. (Currently Amended) The method as set forth in claim 1, wherein said shape signature classifier is a support vector machines classifier.

11. **(Currently Amended)** The method as set forth in claim 1, wherein said shape signature classifier is optimized with training data.

5 12. **(Original)** The method as set forth in claim 1, wherein said classified shape is used as training data for said classifier.

13. **(Original)** The method as set forth in claim 1, wherein the step of classifying further comprises the step of distinguishing a polyp from a non-polyp.

10 14. **(Original)** The method as set forth in claim 1, wherein said shape is selected by a pre-detection of said shape.

15 15. **(Currently Amended)** The method as set forth in claim 1, wherein said medical image is obtained through computed tomography colonography, wherein said at least part of said structure is at least part of a colon, wherein said shape is within said at least part of said colon, and wherein said shape is either a polyp or a non-polyp.

20 16. **(Currently Amended)** The method as set forth in claim 1, wherein said step 1(b) is performed in a post-processing step. A method for detecting and classifying a shape in a medical image, comprising:

(a) ~~in a pre-processing step, detecting said shape in a 3-D volume of said medical image; and~~

25 (b) ~~in a post-processing step, performing feature estimation of said detected shape for each of a plurality of 2-D sections defined in said volume, generating a~~

~~shape signature based on said estimated features and classifying said shape signature with a classifier to classify said shape.~~

- 17. (Canceled)
- 18. (Canceled)
- 19. (Canceled)
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- 24. (Canceled)
- 25. (Canceled)
- 26. (Canceled)
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- 28. (Canceled)
- 29. (Canceled)

30. (Currently Amended) The method as set forth in claim 1, wherein said method

steps are computer-implemented and executable as a computer program. A program
storage device accessible by a computer, tangible embodying a program of
instructions executable by said computer to perform method steps for detection and
classification of a shape in a medical image, comprising:

- (a) ~~means for generating a plurality of 2-D sections through a 3-D volume in said medical image, said 3-D volume comprises said shape;~~
- (b) ~~means for performing feature estimation of said shape for each of said plurality of 2-D sections;~~
- (c) ~~means for generating a shape signature based on said estimated features; and~~
- (d) ~~means for classifying said shape signature with a classifier to classify said shape.~~

- 31. (Canceled)
- 32. (Canceled)
- 33. (Canceled)

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- 34. (Canceled)
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